

Muguthang, Army camp area, S.K. Rai 9490 (BSBC!).

**Note:** This variety is distinguishable from var. *everestiana* by the following main characters:

DISTINGUISHING CHARACTERS OF TWO VARIETIES OF *Berberis everstiana* AHRENDT

S.N.	var. <i>everestiana</i>	var. <i>ventosa</i>
1.	Leaves entire, never spinulose	Leaves sometimes spinulose
2.	Stamens truncate	Stamens apiculate
3.	Fruits 9-10 mm	Fruits c 7 mm
4.	Seeds purple	Seeds yellow-brown

REFERENCES

SHARMA, B.D.; N.P. BALAKRISHNAN; R.R. RAO & P.K. HAJRA (1993) Flora of India, Vol. I, BSI, Calcutta.

## 27. STUDIES OF VIVIPAROUS GERMINATION IN *ARTOCARPUS HETEROPHYLLUS* LAM

Vivipary is the germination of seeds in the fruit while the fruit still remains attached to the plant; it is particularly common in mangrove plants. There are relatively few certain records of viviparous germination in mesophytes like *Pennisetum* (Reddy and Chatterjee, 1976), *Livistona chinensis* (Kulkarni and Pandey, 1976), *Allium cepa* (Foja *et al.*, 1967), *Citrullus vulgaris* (Singh and Sharma, 1972), *Sechium edule* (Katiyar, 1976), etc. The present case is a new addition to the list.

200 mature fruits of *Artocarpus heterophyllus* were collected from different regions of Kanyakumari district of Tamil Nadu, India and from markets to study the presence of viviparous germination in them. Germinated seeds in the fruits were collected from the ripe fruits by cutting them with a sharp knife. Of the 200 fruits studied, 23 fruits had germinated seeds in them. 573 germinated seeds were collected from the 23 fruits. Length of shoot and root of each of the seedlings were measured using a metre scale. The maximum height of the shoot was 9.8 cm, and of the root was 10.2 cm. The average height of the shoots was 6.3 cm, and of the roots was 7.6 cm. Then 300 dormant seeds were collected from fruits that did not have germinated seeds and sowed in the garden soil to raise seedlings. The seeds

## ACKNOWLEDGEMENT

We are grateful to the Director, BSI for facilities provided.

September 7, 1995

R. R. RAO  
R. C. SRIVASTAVA  
*Botanical Survey of India,*  
*Allahabad-211 002.*

T. HUSAIN  
*National Botanical Research Institute,*  
*Lucknow-226001.*

took four days for germination under normal conditions. After germination, 25 seedlings were uprooted from the nursery every day without damaging their roots and the average height of shoots and roots were measured as usual. The height of the shoot reached 6.3 cm on the 6th day after germination, and of the roots reached 7.6 cm on the 7th day after germination. The seedlings took 9 days for producing shoots of 9.8 cm height. The shoots of viviparous seedlings were pale yellow in colour with soft stem. They became green within two days when they were exposed to sunlight. The growth was somewhat rapid in roots as compared to shoot growth. But in artificial germination the shoot growth was higher than the root growth. This shows that the internal environment of such fruits is more suitable for seed germination than the soil.

The ripe ovaries around the germinated as well as dormant seeds were collected from viviparous and non-viviparous fruits respectively, and their moisture content was measured using weighing method. The moisture percentage was the same (89.3%). This was also done in ovaries whose seeds were at the stage of sprouting. The moisture percentage of ovaries containing sprouting seeds was 79.1% and that of ovaries containing non-viviparous seeds was

found to be 71.72%. The high moisture content in viviparous fruits before ripening might be the reason for the viviparous germination.

Kulkarni and Pandey (1976) pointed out that humidity was the main reason for viviparous germination in *Livistona chinensis*. In the present case also, the moisture content was higher in ovaries of viviparous fruits than in ovaries of fruits whose seeds were dormant. The increase in moisture content before ripening might be the reason for viviparous germination in *Artocarpus heterophyllus*. The roots of viviparous seedlings produced a thick dense mat of rootlets in fleshy ovary around the seed and made it useless for consumption because of its bitter taste.

The frequency of viviparous germination was high (19/100 fruits) in fruits harvested after ripening, and was low (4/100 fruits) in fruits harvested before ripening. So early harvesting of fruits before ripening can reduce the damage of fruits by viviparous germination of their seeds.

I thank Prof. R. Bothi, Head of the Department of Botany, Vivekananda College, Agasteeswaram for references and suggestions.

June 15, 1996

V. KUMARESAN

Dept. of Botany,  
Vivekananda College,  
Agasteeswaram, Tamil Nadu-629 701.

#### REFERENCES

- KATTYAR, R.B. (1976): Induced Vivipary in long melon. *Sci. Cul.* 44-233.  
KULKARNI & S.B. PANDEY (1976): Vivipary in *Livistona chinensis* R. Br. *Curr. Sci.* 45-344.  
REDDY, B.M. & A.K. CHATTERJEE (1976): Vivipary in

*Pennisetum Sci. Cul.* 42-199.

- SINGH, O.S. & V.K. SHARMA (1972): On the Occurrence of Vivipary and its Mechanism in Water melon *Citrullus vulgaris* Schrad, *Curr. Sci.*

### 28. *CEROPEGIA BULBOSA* VAR. *LUSHII* (GRAH.) HOOK. F.: A NEW FOOD PLANT FOR PLAIN TIGER BUTTERFLY *DANAUS CHRYSIPPUS* (LINN.)

While carrying out the survey of genus *Ceropegia* (Linn.) Family *Asclepiadaceae* on 15th September, 1995, at Appachi Wadi near Kolhapur in Maharashtra, we found an egg of a butterfly on the undersurface of the leaf of a *Ceropegia bulbosa* var. *lushii* (Grah.) Hook.f. We collected the egg and brought it to Mumbai along with the food plant. The larva hatched out on 17th September, 1995. It fed upon the leaves of *C. bulbosa* var. *lushii*. It pupated on 26.ix.95 and on 4.x.95, an adult of the Plain tiger *Danaus chrysippus* (Linn.) emerged from the pupa.

*C. bulbosa* var. *lushii* is a xerophytic plant. The leaves are long, linear, thick and fleshy. *D. chrysippus* is mainly found in open country and is less common in damp, forested hilly regions

(Wynter-Blyth, 1982). Earlier, Pennington (1978) had recorded *Ceropegia* sp. as one of the food plants of *D. chrysippus* in Ackery and Vane-Wright (1984).

We acknowledge our sincere thanks to Dr. S.R. Yadav, Shivaji University, Kolhapur who helped us in spotting the plant.

December 21, 1995

NEELAM PATIL

M R ALMEIDA  
Bombay Natural History Society,  
Hornbill House,  
Dr. Sálím Ali Chowk,  
S.B. Marg, Bombay-400 023.

#### REFERENCES

- ACKERY, P.R. & R.I. VANE-WRIGHT (1984): Milkweed butterflies - their cladistics and biology, Dept. of Entomology, British Museum. U.K. p. 210.  
PENNINGTON, K.M. (1978): Butterflies of Southern Africa,

670 pp., 1 map, Johannesburg.  
WYNTER-BLYTH, M.A. (1982): Butterflies of the Indian region. Reprinted ed. Today and Tomorrow's Printers & Publishers, New Delhi 523 p. 69.